

Observations, 1957-1958

Apparently 4 pounds of alfalfa hay furnished adequate protein and other nutrients that are supplied by alfalfa hay since the heifers receiving this treatment, with supplementary total digestible nutrient intake equalized, gained 0.17 pound more per head daily than heifers receiving 8 pounds of alfalfa hay per head daily.

For the winter and summer periods combined, heifers fed 4 pounds of alfalfa hay and 2.6 pounds of corn per head daily gained about 10 percent more than heifers fed 8 pounds of alfalfa hay.

The economy of the two rations would depend on the relative cost of hay and grain. With current prices, the all-alfalfa hay ration would be fully as efficient a ration as the alfalfa and grain combined.

This test demonstrates how alfalfa hay feeding on winter pasture can be reduced from 8 to 4 pounds per head daily with satisfactory results, if the difference in hay intake is made up by feeding about 2½ pounds of corn.

Table 10

Two levels of alfalfa hay for wintering heifer calves on bluestem pasture.
Wintering—December 14, 1957, to April 19, 1958—127 days.

Pasture number	13	8
Number of heifers	10	10
Initial wt. per heifer, lbs.	525	518
Gain per heifer	73	94
Daily gain per heifer	0.57	0.74
Daily ration per heifer, lbs.:		
Alfalfa hay	8.0	4.0
Ground shelled corn		2.6
Bluestem pasture		Free choice
Salt		Free choice
Bonemeal and salt		Free choice
Feed cost per heifer ¹	8.13	11.65

Grazing—April 19, 1958, to July 19, 1958—91 days.

Initial wt. per heifer	598	612
Gain per heifer	164	171
Daily gain per heifer	1.80	1.88
Feed cost per heifer	\$16.00	16.00

Summary—December 14, 1957, to July 19, 1958—218 days.

Initial wt. per heifer	525	518
Final wt. per heifer	762	783
Gain per heifer	237	265
Daily gain per heifer	1.09	1.22
Feed cost per heifer ¹	\$24.13	27.65
Feed cost per cwt. gain ¹	\$10.18	10.43

1. Feed prices may be found on inside back cover.

Three-Year Summary, 1955-58

For the three-year summary (Table 11), the 3.7 pounds of alfalfa hay and 2.2 pounds of corn fed per head daily to the heifers in pasture 2 produced .20 pound more gain per head daily during the winter and 9 percent more gain for the winter and summer combined than the 7.3 pounds of alfalfa hay fed per head daily to pasture 1. This trend has been the same in each of the three years tested.

Apparently 3 to 4 pounds of alfalfa hay furnishes adequate protein and other nutrients supplied by alfalfa hay, since this lot, when fed 2-2.5 pounds of corn per head daily to equalize total digestible nutrient intake, gained as much or more than heifers fed 7 to 8 pounds of alfalfa hay per head daily.

A comparison of costs of production with the two rations would depend on the relative cost of hay and grain. When alfalfa hay is unavailable or high in price, this test demonstrates a low level that can be fed with satisfactory results.

Table 11

Three-Year Summary

A comparison of two levels of alfalfa hay for wintering heifer calves on bluestem pasture, 1955-1958.

Wintering—December to April—126.7 days (average)..

Pasture number	1	2
Total number of heifers in test	31	30
Initial wt. per heifer, lbs.	492	488
Gain per heifer	43	68
Daily gain per heifer	0.34	0.54
Daily ration per heifer, lbs.:		
Alfalfa hay	7.3	3.7
Ground shelled corn		2.2
Bluestem pasture		Free choice
Salt		Free choice
Bonemeal and salt mixture		Free choice
Feed cost per heifer ¹	\$11.75	14.22

Grazing—107.7 days.

Initial wt. per heifer	535	556
Gain per heifer	196	194
Daily gain per heifer	1.82	1.80
Feed cost per heifer	\$16.00	16.00

Summary—234.4 days.

Initial wt. per heifer	492	488
Final wt. per heifer	731	750
Gain per heifer	239	262
Daily gain per heifer	1.02	1.12
Feed cost per heifer ¹	\$27.75	30.22
Feed cost per cwt. gain ¹	\$11.61	11.53

1. Feed prices: Alfalfa hay, \$20 per ton; corn, \$2.50 per cwt.; pasture, \$16 for summer and \$0.50 per head monthly for winter use.

Different Methods of Managing Bluestem Pastures, 1958. Projects 253-3 and 253-5.

E. F. Smith, K. L. Anderson, B. A. Koch, F. W. Boren, and G. L. Walker

This experiment is to determine effects of different stocking rates, deferred grazing, and pasture burning on cattle gains, productivity of pastures and range condition as determined by plant population changes. In addition to the yearly report, a summary of cattle gains for the past nine years of the study is included.

Experimental Procedure

Two-year-old Hereford steers with an average USDA feeder grade of High Good were used to stock the pastures. They had been purchased as calves from near Melrose, N.M., and had been used in this study as yearlings during the summer of 1957. During the winter of 1957-58 they were wintered on bluestem pasture and supplemented with about 2 pounds of soybean pellets per head daily until mid-January and were then moved to drylot and fed prairie hay with about 4 pounds of alfalfa hay per head daily. This ration was continued until May 1, 1958.

The method of management of each pasture was:

- Pasture 1. Normal stocking rate, 4 acres per head.
- Pasture 2. Overstocked, 3 acres per head.
- Pasture 3. Understocked, 6 acres per head.
- Pastures 4, 5, 6. Deferred grazing, 4 acres per head.

All steers in the deferred group were held in pastures 4 and 5 until June 16, then turned into deferred pasture 6 until August 16. From August 16 until September 2 the steers were in all three pastures. Sep-

tember 2 they were again put into pastures 4 and 5 until the close of the test.

Pasture 9. Burned March 21, 1958, normal rate of stocking.
 Pasture 10. Burned April 11, 1958, normal rate of stocking.
 Pasture 11. Burned May 1, 1958, normal rate of stocking.

Observations

The results are presented in Tables 12 and 13. An excellent top growth remained after the grazing season on all pastures except pasture 2 (overstocked) and pasture 9 (early spring burned). Pasture 6, a deferred pasture, also had much of its top growth removed; the 45 steers on this treatment remained on this 60-acre pasture 60 days. Normal stocking, overstocking, understocking, and deferred grazing all produced about the same gain per head in 1958; but mid- and late-spring burning increased cattle gains in 1958 as they have in nearly every year tested.

Moisture was fairly abundant throughout the growing season of 1958 and top growth was, therefore, greater than in any recent year. This made the heavily stocked pasture more nearly moderately utilized than in the past. That, coupled with the fact that cattle were sold September 20, nearly six weeks before the normal close of the growing season, failed to give this pasture heavy use in 1958. This prevented the cattle from experiencing effects on weight gains of overstocking and it seems to have prevented the grasses from being abused by the close grazing.

On the burned pastures, while it is obvious that early-spring burning (March 20) is damaging the cover and fairly obvious that mid-spring burning (April 10) is also harmful, it is difficult as yet to show any serious, permanent damage from the late spring burning (May 1). It admittedly is too early in this trial to make such a statement without qualifications, but it is known that burning removes mulch. This always results in increased runoff and evaporation and in a reduced rate of water intake by the soil. Reduction in intake rate is known to continue at least until fall and may be a year-round phenomenon. This is certain to affect production of top growth, but it is partly obscured in years like 1958 when rains came rather frequently throughout the growing season. The past season was not a good one to evaluate the results of these tests.

Table 12
A comparison of different methods of managing Kansas bluestem pastures.
 May 1, 1958, to September 20, 1958—142 days.

Pasture number	1	2	3	4, 5, 6	9	10	11
Management	Normally stocked	Overstocked	Understocked	Deferred	Early spring burned	Mid-spring burned	Late spring burned
No. steers per pasture	15	20	10	45	11	11	11
Acres in pasture	60	60	60	3-60 ¹	44	44	44
No. acres per head	4	3	6	4	4	4	4
Av. initial wt., lbs.	738	738	739	743	745	746	747
Av. final wt., lbs.	946	945	946	941	967	1016	1000
Av. gain per steer, lbs.	208	207	207	198	222	270	253
Av. daily gain, lbs.	1.46	1.45	1.45	1.39	1.56	1.90	1.78
Av. gain per acre, lbs.	52	69	35	50	56	68	63

1. Three 60-acre pastures.

Table 13
Yearly account of cattle gains under different methods of grazing pastures; nine-year summary, 1950-1958. Average gain per steer in pounds for the summer season of approximately 150 days.

Pasture number	1	2	3	4, 5, 6	9	10	11
Management	Normally stocked	Overstocked	Understocked	Deferred rotated	Early spring burned	Mid-spring burned	Late spring burned
1950	221	210	214	205	216	254	230
1951	242	256	290	234	243	265	254
1952	246	209	228	197	251	278	283
1953	226	194	233	197	205	217	234
1954	261	237	236	214	270	271	306
1955	270	224	253	213	282	305	307
1956	179	184	168	154	212	234	216
1957	243	236	244	209	261	256	279
1958	208	207	207	198	222	270	253
Average	233	217	230	202	240	261	262

Stilbestrol Implants¹ for Steer Calves on a Wintering, Grazing, and Fattening Program; the Value of a Tranquilizing Agent¹ During the Wintering and Fattening Periods, 1957-1958. Project 253-6.

E. F. Smith, B. A. Koch, F. W. Boren, and G. L. Walker

Good to choice quality Hereford steer calves originating near Clovis, N.M., were used in the experiment and assigned to treatments on the basis of weight. All of the lots received the same basic ration during the wintering period from December 5, 1957, to April 24, 1958. They were grazed on bluestem pasture from April 24 to August 7 and were started on grain on grass prior to being moved to drylot. All lots were fed the same feeds during the fattening period from August 7, 1958, to November 14, 1958. The grain was self-fed.

The experimental treatment was as follows:

Lot 1. Control group of 10 steer calves, implanted with 24 mg. of stilbestrol August 9, 1958.

Lot 2. Eighteen steer calves, all implanted with 24 mg. of stilbestrol December 10, 1957, 6 were reimplanted with 24 mg. of stilbestrol April 30, 1958, and 6 more August 9, 1958, leaving only 6 with the original fall implant. See Table 14 for gains of different implant groups.

Lot 3. Eight steer calves that received 2.5 mg. of Tran-Q per head daily during the wintering and fattening periods. They were implanted with 24 mg. of stilbestrol August 9, 1958.

Wintered with each lot, but not included in this report, were 10 steer calves that remained in drylot for fattening studies when the steers listed here were removed to pasture.

Observations

A 24-mg. stilbestrol implant increased winter gains .20 pound per head daily, with some increase in efficiency; compare lots 1 and 2 in Table 14. In Table 15, based on a rather limited number of animals, it appears that another implant in April, following a previous fall implant, is necessary for increased grass gains. Calves implanted in the fall of 1957 also responded to an August, 1958, implant for an increased fattening gain. Steers implanted only at the start of the fattening period had slightly higher grading carcasses, but the difference is so small it is difficult to evaluate.

The tranquilizer had no apparent effect during the winter period. However, for some unknown reason grass gains were larger for this lot. The tranquilizer increased fattening gains .53 pound per steer daily, with no increase in feed efficiency due to consumption of more grain. The increased gains noted here possibly could be attributed to some other factor, since in another test reported in this circular very little increase in gain was noted where the same tranquilizer was fed.

1. The stilbestrol implants and Tran-Q (a brand name for Hydroxyzine, a tranquilizing agent) were furnished by Charles Pfizer and Co., Inc., Terre Haute, Ind.

Table 14

Stilbestrol implants for steer calves on a wintering, grazing and fattening program; the value of a tranquilizing agent during the wintering and fattening periods.

Phase 1—Wintering—December 5, 1957, to April 24, 1958—140 days.

Lot number	1	2	3
Lot number	1	2	3
Gain per steer	183	212	191
Daily gain per steer	1.31	1.51	1.36
Daily ration per steer, lbs.:			
Sorghum grain	4.0	4.0	4.0
Soybean meal	1.0	1.0	1.0
Sorghum silage	13.5	14.1	12.7
Prairie hay	7.1	7.1	8.1
Tranquilizer (Tran-Q) ¹	No	No	Yes
Stilbestrol implants, 24 mg. ²	No	Yes	No
Salt and mineral, free choice ³			
Feed per cwt. gain, lbs.:			
Sorghum grain	306	264	293
Soybean meal	77	66	73
Sorghum silage	1033	931	931
Prairie hay	543	469	594
Feed cost per steer ⁴	\$29.47	29.76	30.05
Feed cost per cwt. gain	\$16.10	14.04	15.73

Phase 2—Grazing—April 24, 1958, to August 7, 1958—105 days.

Initial wt. per steer, lbs.	734	763	753
Gain per steer	89	98	117
Daily gain per steer	.85	.93	1.11
Grazing cost per steer	\$16.00	16.00	16.00

Phase 3—Fattening—August 7, 1958, to November 14, 1958—99 days.

Initial wt. per steer, lbs.	823	861	870
Gain per steer	297	294	349
Daily gain per steer	3.00	2.97	3.53
Daily ration per steer, lbs.:			
Sorghum grain, self-fed	20.0	22.5	23.5
Soybean meal	1.0	1.0	1.0
Alfalfa hay	5.2	5.2	5.4
Implanted with stilbestrol, 24 mg.	Yes	Yes ²	Yes
Tranquilizer	No	No	Yes
Salt, free-choice			
Feed per cwt. gain, lbs.:			
Sorghum grain	667	758	668
Soybean meal	33	34	28
Alfalfa hay	174	176	153
Feed cost per steer, this phase ⁴	\$47.43	51.51	53.68
Feed cost per cwt. gain	\$15.97	17.52	15.38

Summary of Phases 1, 2 and 3—December 5, 1957, to November 14, 1958—344 days.

Final wt. per steer, lbs.	1120	1155	1219
Gain per steer, all phases	569	604	657

1. Tran-Q is the brand name of a tranquilizer (Hydroxyzine) supplied by Chas. Pfizer & Co., Inc., Terre Haute, Ind. It was fed at the level of 2½ mg. per head daily during the wintering and fattening periods.

2. All steers were implanted with 24 mg. stilbestrol December, 1957; 6 were re-implanted in April with 24 mg., and 6 more in August with 24 mg. See table for gains by phases of each implanted group.

3. Mineral was equal parts bonemeal and salt by weight and salt by itself, all free choice.

4. Feed prices may be found inside back cover.

Table 14 (Continued)

Daily gain per steer	1.65	1.76	1.91
Feed cost per steer ¹	\$92.90	97.27	99.73
Feed cost per cwt. gain	\$16.33	16.10	15.18
Sale price per cwt., live weight, based on carcass value ²	\$27.40	26.93	27.13
Dressing percent	60.2	59.4	59.6
Carcass grade:			
Average choice	1	1	1
Low choice	1	1	1
High good	2	2	2
Average good	2	6	1
Low good	3	7	2
High standard	1	2	1
Average grade ³	17.1	16.6	17.4
Average marbling score ⁷	7.2	7.6	7.5

5. Sale price per cwt. was based on the following carcass values per cwt.: Choice, \$46.50; Good, \$45.50; Standard, \$43.50.

6. The USDA grade, low good, was assigned a numerical value of 16; average good, 17.

7. Degree of marbling: A score of 7 indicates small amount, 8 indicates slight amount. The higher the score, the less marbling.

Table 15

The effect of implanting steers with stilbestrol at different times during a wintering, grazing, and fattening program.

Treatment	Number of steers per treatment	Winter gain	Summer gain	Fattening gain	Total gain	Average carcass grade ¹
		Dec. '57 to Apr. '58, 140 days	Apr. '58 to Aug. '58, 105 days	Aug. '58 to Nov. '58, 90 days	Dec. '57 to Nov. '58, 344 days	
Pounds per head						
Implanted in December, 1957, with 24 mg...	6	228	83	282	593	16.7 ¹
Implanted in December, 1957, and April, 1958, with 24 mg. each time	6	214	110	276	600	16.8 ¹
Implanted in December, 1957, and August, 1958, with 24 mg. each time	6	199	98	321	618	16.3 ¹
Implanted in August, 1958, with 24 mg.	10	183	89	297	569	17.1 ¹

1. The USDA grade, low good, was assigned a numerical score of 16; average good, 17.

The Value of Stilbestrol Implants,¹ Stilbestrol Implants Plus Aureomycin,² and Shelter for Wintering Steer Calves, 1958-1959. Project 253-6.

E. F. Smith, B. A. Koch, F. W. Boren, and D. Richardson

Forty-four good to choice Hereford steer calves from near Paducah, Texas, were assigned to four treatments on the basis of weight. All lots were fed identical high roughage rations. They received per head daily: 4.7 pounds of sorghum grain, 0.5 pound of soybean meal, 0.1 pound of bonemeal, and 3 pounds of alfalfa hay. Sorghum silage was fed according to appetite, and salt was offered free choice.

1. The stilbestrol implants were furnished by Charles Pfizer and Co., Inc., Terre Haute, Ind.

2. The Aureomycin was furnished by the American Cyanamid Co., Pearl River, N.Y.

The experimental treatments were as follows:

Lot 1. Control.

Lot 2. Each steer implanted with 24 mgs. of stilbestrol in the right ear.

Lot 3. Each steer implanted with 24 mgs. of stilbestrol in the right ear plus 70 mgs. of Aureomycin per steer daily added to the soybean meal.

Lot 4. Access to a shedlike metal shelter closed to the north and above but open to the south, east, and west.

The steers were fed in dirt lots with wooden fences, and a low solid wooden fence on the north served as a windbreak for each lot.

The animals in this experiment will be grazed and fattened during the summer and fall of 1959; some will be reimplanted with stilbestrol to collect more information on the use of stilbestrol implants in a wintering, grazing, and fattening program.

Observations

A 24-mg. stilbestrol implant increased steer gains 0.21 pound per head daily, with a small improvement in efficiency. Increased gains have been obtained in previous trials at this station of about the same magnitude. No readily apparent change in appearance of the animals was noted; however, as the animals continue on test some differences may develop. Slight to severe changes in the tailhead region have been noted in previous trials, depending on the level of implant and level of nutrition.

Aureomycin failed to improve performance when fed to stilbestrol-implanted steers. Small but consistent gain increases have been noted in other trials when Aureomycin was fed to nonstilbestrol-implanted steers.

Shelter proved to be of little value in this experiment.

Table 16

The value of stilbestrol implants, stilbestrol implants plus Aureomycin, and shelter for wintering steer calves.

December 1, 1958, to March 30, 1959—120 days.

Treatment	Control	Stilbestrol implant	Stilbestrol implant and Aureomycin	Shelter
Lot number	1	2	3	4
Number of animals	10	12	12	10
Initial wt. per steer, lbs.	488	494	495	489
Final wt. per steer, lbs.	697	728	725	707
Gain per steer	209	234	230	218
Daily gain per steer	1.74	1.95	1.92	1.82
Daily ration per steer, lbs.:				
Soybean meal	0.5	0.5	0.5	0.5
Sorghum grain	4.7	4.7	4.7	4.7
Bonemeal	0.1	0.1	0.1	0.1
Alfalfa hay	3.0	3.0	3.0	3.0
Sorghum silage	23.3	24.4	24.3	23.2
Salt, free choice				
Stilbestrol implant, 24 mgs. ..		Yes	Yes	
Aureomycin, 70 mgs. per head daily				Yes
Feed per cwt. gain, lbs.:				
Soybean meal	29	26	26	28
Sorghum grain	271	242	246	260
Alfalfa hay	172	154	157	165
Sorghum silage	1337	1253	1267	1278
Feed cost per cwt. gain ¹	\$11.48	10.44	11.21	10.99

1. Feed prices used are on the inside back cover.